UNIVERSITI TEKNOLOGI MARA
Cawangan Terengganu
Kampus Bukit Besi

TITLE:

FUNCTIONAL GROUP OF THE SODIUM SUPPORTED BY ACTIVATED CARBON CATALYST WITH MASS RATIO NA:AC OF 1:1, 1:3, 1:4 FOR BIODIESEL PRODUCTION

SUPERVISOR:

TS. NORKAMRUZITA BINTI SAADON

SCHOOL OF CHEMICAL ENGINEERING

COLLEGE OF ENGINEERING

2024

AUTHOR'S DECLARATION

" I hereby declare that this report is the resof my own work except for quotations and summaries which have been duly acknowledged."

Name of Student	:	MUHAMMAD HAFIZI BIN RAZALI
Student I.D. No.	:	2022862984
Programme	:	Diploma in Chemical Engineering
College/School	:	College of Engineering/School of Chemical Engineering
Signature of Student	:	.....
Date	:	12/2/2025

ABSTRACT

For my Final Year Project (FYP), the title is **"Functional Group of The Sodium Supported by Activated Carbon Catalyst with Mass Ratio Na/AC of 1:1, 1:3, and 1:4 For Biodiesel Production"** using transesterification process. The research is to identify and determine the functional groups of Na/AC and to find the efficiency of catalyst for biodiesel production. Malaysia is the second largest country, which produce the waste of Oil Palm Kernel Shell (OPKS). Every year, the rate of waste of OPKS increases.

Fourier Transform Infrared Spectroscopy (FTIR) is a method to analyze the functional groups of catalytic activities. The result showed the variations of the Na:AC at mass ratio 1:1, 1:3, and 1:4 had a significant effect on the functional groups contribution and catalytic performance. This project also found the Sodium Hydroxide (NaOH) as a heterogeneous catalyst increased biodiesel yield by increasing selectivity and reducing the formation of byproducts compared to homogeneous catalysts. Overall, this project is research to find the potential of Na/AC composites to optimize the heterogenous catalyst for production of biodiesel while managing the renewable fuels and reducing the waste.

TABLE OF CONTENTS